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A CRITICAL ANALYSIS OF THE APPLICATION OF MANUAL MANAGEMENT GAMES TO THE BUSINESS ADMINISTRATION AND ECONOMICS CURRICULUM AT THE UNITED STATES NAVAL POSTGRADUATE SCHOOL

JAMES BLY DAVIS
and
JOHN GERALD WURTH

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by

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Submitted in partial fulfillment of
the requirements for the degree of

MASTER OF SCIENCE
IN
MANAGEMENT

United States Naval Postgraduate School
Monterey, California

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James Bly Davis

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This work is accepted as fulfilling
the research requirements for the degree of
MASTER OF SCIENCE
IN
MANAGEMENT
from the
United States Naval Postgraduate School

ABSTRACT

A number of manual management games were analyzed in detail in order to determine if any of these games were potentially useful in the teaching of courses in the Business Administration and Economics curriculum at the United States Naval Postgraduate School in order to materially reduce or eliminate the research required to utilize this instructional technique in this curriculum.

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I

STATEMENT OF THE PROBLEM

1. Introduction

Management gaming is a relatively new teaching technique for use in management training and business education. The first management game is generally acknowledged to be the game introduced by the American Management Association in 1956.[1] This game and its use generated a wave of interest and enthusiasm which seems to have reached a crest around 1959. Since that time, management gaming appears to have lost much of its appeal as a pedagogical fad, but has experienced continued use and development by those serious and dedicated adherents who consider management games a useful and effective addition to the inventory of instructional techniques. As expressed by the author of an article in Management Record in February, 1960

> The first flush of enthusiasm has died down, to be replaced with a more reasoned evaluation of the games as a training technique...[2]

This paper is an effort to contribute to this "more reasoned evaluation".

2. Assumptions

The literature on management gaming deals at length with the issue of whether or not gaming is an effective instructional technique.

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[1] Kalman J. Cohen and E. Rhenman, "The Role of Management Games in Education and Research," Management Science, 7:132, January, 1961.

[2] "The Serious Business of Business Games," Management Record, 22:6, February, 1960.

Advocates of gaming present a sound case for including this technique among other accepted teaching tools. Even the most enthusiastic adherents seem embarrassed, however, by the fact that the effectiveness of gaming has apparently not yet been validated through scientific experimentation, although, as Stern points out, neither case discussion nor lecturing has been so validated.[3] In this regard, it is emphasized that this paper makes no attempt to evaluate management gaming as a teaching method. Rather, it is accepted as a basic assumption of this paper that management games are an effective teaching technique when used in an integrated program of instruction with other teaching methods.

Proceeding from this basic assumption, it is hypothesized that if management gaming is a useful and effective technique for teaching courses in business and management, its applicability to the courses taught in the Business Administration and Economics curriculum at the U. S. Naval Postgraduate School should be considered.

3. Definitions

Before continuing further, it is considered appropriate to present some definitions of terms that will be used in this paper.

The following is quoted from the Proceedings of the Conference on Business Games as Teaching Devices held at Tulane University in April, 1961:[4]

> As a first step toward our objectives though, we need to recall what is meant by "management" or "business" games. The participants at Tulane could not agree on a definition, but they suggested an immense variety of examples of games.

---

[3] Mark E. Stern, "The Catalytic Power of Business-Decision Gaming in Teaching Management Science," Computers and Automation, 11:12, November 1962.

[4] Proceedings of the Conference on Business Games as Teaching Devices (Tulane University, New Orleans, La., April 26-28, 1961) p. 16

In spite of the apparent difficulty of arriving at agreement on basic definitions in discussing management games which is illustrated by the above quotation, and which is quite evident in the literature on the subject, the following definitions and explanations of terms are presented, and will be used as operational definitions for purposes of this paper.

Management Games: (This term will be used exclusively and includes the terms "business games", "management simulation" and "business simulation"). A management game is a sequential decision-making exercise structured around a model of a business operation, in which participants assume the role of managing the simulated operation.[5]

A somewhat simpler definition is developed by Blackford[6] who defines a management game as a continuous exercise using a mathematical model which provides feedback to the participants which assists them in making follow-on decisions. However, while feedback and follow-on decision-making are certainly among the most important features of management gaming, and are those that distinguish them most from other methods of instruction, some of the simpler functional games researched in this study are marginal in this respect. At the lower end of the management games complexity spectrum, the line between management games and simple simulation is not too clear.

Sisson has written a very useful article in which he sorts out the considerable confusion which exists regarding the use of the word games

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[5] Paul S. Greenlaw, et al., Business Simulation in Industrial and University Education (Englewood Cliffs, New Jersey, :Prentice-Hall, 1962) p.5

[6] John H. Blackford, "Management Gaming and Its Applicability at the U. S. Naval Postgraduate School" (Unpublished Master's Thesis, The United States Naval Postgraduate School, Monterey, California, 1964) p. 18. Other aspects of Blackford's thesis as it relates to this paper are discussed later.

or gaming, and this article is recommended to the reader who still finds the literature on management games confusing as to precisely what such games are.[34]

Management games can be categorized in several ways:

As computerized or manual games: Computerized games utilize a computer to calculate the effect of participants' decisions on the simulation as determined by the game model, to adjust the simulation accordingly, and to provide the feedback to the participants. Manual games are those in which the above computations are performed manually, either by the participants themselves (in the simpler simulations) or by a clerical staff assisting in the conduct of the game.

As interactive or non-interactive games: Interactive games are those in which the decisions of each participant or each team affects the other participants or teams. Non-interactive games are those in which each participant or each team "competes" only against the simulation and the decisions of each participant or team have no effect on other participants or teams.

As total enterprise or functional games: Total enterprise games are those in which several managerial functions are brought together so that players have an opportunity to see how these functions can be integrated in making decisions. Functional games are those designed to demonstrate problems encountered in specified management areas such as production control, marketing, etc.

In describing or discussing management games in this paper, it has been found useful to categorize their characteristics into two groups:

Objective characteristics. Those that reflect what the subject matter of the game is, what the business or economic environment is in which the game is developed, what concepts, principles, or techniques are being

emphasized, and so forth. This term is also used to refer to similar characteristics of the courses analyzed.

Administrative characteristics. Those that refer to the time required to play the game; material, equipment and space required; clerical assistance required; and time and effort required on the part of the game administrator and his assistants.

4. The Problem

As described above, management games can be categorized on two different bases, i.e., as computerized or manual games, and as total enterprise or functional games. Computerized games were developed as total enterprise games became more complex and the manual scoring and operation of these games became more burdensome. As games were computerized it became possible to incorporate more features into the games and the models became more and more sophisticated. It is a basic premise of this paper, however, that manual games retain an important place in gaming for use under circumstances where computers are not available or where the greater commitment to gaming that is generally required by computerized games is not considered necessary or appropriate to achieve the desired results in the courses of instruction being considered. It is toward these manual games that the research of this paper has been directed on the basis that there may be a tendency to overlook the potential of manual games in the face of the greater popularity and glamor of the computerized games, and that, as a result, opportunities to utilize the management gaming technique may be overlooked when circumstances are not appropriate to the use of computer games for one reason or another.

The problem is, then:

a. to determine what manual management games are available,

b. to determine which, if any, of these games are applicable to, and have potential use in courses taught in the Business Administration and Economics curriculum, and

c. to present this information in a useful manner to facilitate a review of manual management games by potential users.

5. Purpose

The purpose of this study is:

a. to provide information not presently available regarding the application of manual management games to the Business Administration and Economics curriculum at the U. S. Naval Postgraduate School.

b. to provide a single source of specific information on manual management games for examination by those interested in the application of gaming to business administration and economics courses taught at the Postgraduate School in order to eliminate, or substantially reduce the research effort required to obtain such information regarding these games.

c. to provide a more extensive file of games in the Postgraduate School library than is presently available.

6. Research Significance

This paper differs from other literature on management games in its specific purpose, which is to relate available manual games to the Business Administration and Economics curriculum at the U. S. Naval Postgraduate School.

Blackford conducted research in the general area of management gaming and its applicability to what was then the "management" curriculum. [39] His was a more general approach, however, and consisted primarily of a review of the development and use of management games and an a priori

conclusion that management games would be useful as a teaching method in this curriculum. After a research of the literature, this conclusion is shared by the writers of this paper, and it forms a basic assumption underlying the purpose in conducting this study. This paper differs from Blackford's work, however, in that it is a specific analysis of available manual management games and of management courses taught at the U. S. Naval Postgraduate School, with a resulting correlation of games and courses based on this analysis.

The information presented in Appendix A differs from or supplements other listings and descriptions of management games found in the literature in that more information about the objective characteristics of many of the games is provided, and many games not reviewed elsewhere are included.

7. Limitations

The following should be noted as limitations of the study.

a. The study is founded on a basic assumption that management gaming is an effective teaching device. The writers are convinced from an exhaustive research of available literature on management gaming that this is a valid assumption, and management gaming has received significant acceptance among teachers and educators. However, this study was not directed towards validating this assumption and the findings of the study do not bear directly on this issue.

b. The applicability, or lack of it, of games to courses as indicated in Chapter IV is a value judgment of the writers.

c. The conclusions of the writers as to applicability of games to courses were based largely upon their experience in the courses as taught during the 1964-1965 academic year, with subject matter emphasis determined

by the particular instructor conducting the course. Consequently, some variation between course subject matter and emphais, as described in the U. S. Naval Postgraduate School catalog,[7] and as presented by various instructors, may exist. However, the extent of such variation should not be great enough to invalidate an otherwise valid correlation reported in this study.

d. Only management games whose purpose is to assist in the teaching of the material involved are considered in this paper. That is to say, games which might be conducted to study the behavior of the participants, such as that described by Hoggatt[8], or simulations whose purpose is to assist in arriving at a solution of a particular problem, such as that described by Geisler[9], are not considered.

e. The results reported in Chapter IV apply only to the games that were available for analysis. In other words, while there may be courses indicated as having no games applicable to them, this applies only with regard to the games analyzed, and games may exist that were not discovered in this research, or games may be developed, that are applicable to these courses.

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[7] United States Naval Postgraduate School Catalogue for 1964-1965, (Monterey, California: United States Naval Postgraduate School, 1964), pp. 73-75.

[8] Austin C. Hoggatt, "An Experimental Business Game," Behavioral Science, 4:192-203, July, 1959.

[9] Murray A. Geisler and Wilbur A. Steger, "How to Plan for Management in New Systems," Harvard Business Review, 40:103-110, September, 1962.

II

REVIEW OF THE LITERATURE

The literature on management gaming consists of articles and papers published in business and management periodicals and professional journals; several books on the design, construction, and use of games; published games or collections of games, usually accompanied by discussions of various aspects of management gaming; a few separately published studies into specific aspects of management gaming; and reports of the proceedings of conferences and symposia. All sources researched in the preparation of this paper are included in the Bibliography.

1. Generally descriptive literature

The largest category of literature on management gaming is the articles and papers appearing in business and management periodicals and professional journals from 1957 to the present. Within this category, there is a large sub-category of articles which are descriptive of management games and their characteristics, use, and development. The material covered in this sub-category can be summarized generally under the following headings:

History and development of management games

Management games are consistently described as having evolved from war games used by the military[1]. Credit is given to the American Management Association for developing and using the first well known management

---

[1] Kalman J. Cohen and E. Rhenman, "The Role of Management Gaming in Education and Research," Management Science, 7:131, January, 1961. See also "A New Concept in Management Training," Management Review, 46:45, May, 1957.

game, their Top Management Decision Simulation, which was developed in 1956[2]. This game is described in a number of articles written by the developers of the game [27, 31]. Next, Ardlinger's well known game appeared in the Harvard Business Review [13]. Subsequently, numerous articles appeared describing the continued development of management games through computerization to the current complex games such as that in use at Carnegie Tech [17].

Value and Advantages of Management Games

From these articles can also be gleaned a compendium of the beneficial characteristics of gaming which give it its instructional value and some of the claimed advantages of gaming over other instructional techniques. These characteristics and advantages are described below with reference to some typical articles:

a. Because of the competitive and dynamic nature of gaming, an unusually high degree of personal involvement and a high level of interest is sustained[3].

b. Games are a simulation of real life situations, providing the student with practical experience and an opportunity to learn by doing[4].

---

[2] Cohen and Rhenman, op. cit, p. 132; "Here's a Realistic Way to Play Wholesaler," Business Week, September 3, 1960, p. 108; Samuel Eilon, "Management Games," Operational Research Quarterly, 14:137, June, 1963; Joel M. Kibbee "Dress Rehearsal for Decision-Making", Management Review, 48:6, February, 1959.

[3] G. R. Ardlinger, "Looking Around: What Can Business Games Do?" Harvard Business Review, 36:150, July, 1958. See also "In Business Education, the Game's the Thing," Business Week, July 25, 1959, p. 63, and Kibbee, op. cit. p. 71.

[4] A. J. Rowe and R. R. Smith, "Now Training for Production Is a Play-It-to-Win Game," Factory Management and Maintenance, 116:146, March, 1958; Kibbee, op. cit., p. 71.

c. Games provide training in planning and organization because of the necessity for these elements in successful gaming[5].

d. Games provide an opportunity for students to make decisions and then experience the effect of these decisions from the immediate feedback provided[6].

e. Games are more effective than lecture discussion methods in creating understanding of subject matter[7].

f. Games are an improvement over case studies in that they are dynamic situations, whereas, in case studies the student does not know the results of his recommendations or decisions[8]. (In their decision making simulation, Basil and Cone effectively combine the case study and the management game technique [1].)

g. Convictions and principles evaluated in an environment that has the characteristics of an operating situation are probably held with more conviction and faith than can be achieved with traditional training methods[9].

Certainly, all of the above benefits and advantages are not attributable to all games. The more complex the game, the more of these characteristics it is likely to have. However, even the simplest games appear to

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[5] Mark E. Stern, "The Catalytic Power of Business-Decision Gaming in Teaching Management Science," Computers and Automation, 11:14; November,1962.

[6] Ibid. p. 16; Kibbee, op. cit., p. 6.

[7] Rowe and Smith, op. cit.,; G.W. Bechberger, et. al., "These Men are Playing Maintenance Management Games." Factory 119:83, February, 1961.

[8] Ardlinger, "Looking Around: What Can Business Games Do?", op. cit. ; "In Business Education, the Game's the Thing," op. cit. p. 58; "The Serious Business of Business Games," Management Record 22:6, February, 1960.

[9] Ardlinger, "Looking Around: What Can Business Games Do? op. cit., p. 150.

reflect to a useful degree the characteristics of greater involvement and interest, and the favorable effect of learning by doing. Cohen and Rhenman [16] present a well-organized discussion of the relationship between the design and administrative characteristics of a management game and its properties as a teaching device which is particularly pertinent to the comments listed above regarding management games. These relationships are presented in a matrix, supplemented by a lucid explanation, which together summarize very well the entire discussion. This matrix and some explanatory remarks are reproduced as Appendix C.

Some indication of the generally favorable student reaction to gaming, which contributes to the contention cited above that games generate a high level of interest and enthusiasm, is given by the results of questionnaires submitted to students after two gaming sessions conducted during the 1964-1965 academic year. A summary of these results is included as Appendix D.

Criticisms and Shortcomings

These articles also cite some shortcomings of the gaming technique. Among them are:

a. Games do not have qualitative elements. One player's dollar buys the same amount of effective research as another's. One salesman is equally productive as another[10].

b. Games are based on abstractions of the real world which leave

---

[10] "In Business Education, the Game's the Thing", op. cit. p. 63; Robert M. Smith, "Management Games-Toy or Trend", Office Management and American Business, 21:22; John D. Stanley, "Management Games: Education or Entertainment?" Personnel Journal, 41:17, January 1962.

out many factors which might be of crucial importance[11].

c. Many of the presently available games were designed without sufficient regard as to purpose or use intended[12].

d. Students who are good at games may not necessarily be equally as good under stress of actual circumstances[13].

2. Other Studies and Papers

Among the studies of various aspects of management gaming reported upon in the literature, Blackford's has been described previously. [39] Again, this study provides a general description of gaming, its history and development, and some general conclusions as to its applicability to the curriculum at the U. S. Naval Postgraduate School.

Another study reported was an attempt to validate management gaming by experimentation. As noted above, little work has been accomplished in this area. McKenney attempted to validate the use of games "to gain acceptance within established curricula that have been developed slowly by experience and proven by the quality of their graduates" by comparing written examinations of students in the game section with those of students in a similar section in an identical course who did not participate in the exercise. McKenney's conclusions were that gaming had demonstrable advantages as a teaching device. It brought out the interrelationships

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[11] Ardlinger, "Looking Around: What Can Business Games Do?", op. cit., p. 151; "In Business Education, the Game's the Thing," op. cit. p. 63

[12] "In Business Education, The Game's the Thing," op. cit. p. 64

[13] Smith, op. cit.

of functional decisions within a firm, and when conducted as a laboratory adjunct to a class, the gaming session seemed to provide an arena for students to experiment with what they were being exposed to in class in such a manner that they could evaluate their own learning. [28]

Many of the papers and studies reported upon in the literature, particularly as presented in proceedings of conferences and symposia, dealt with the question of the role of management games in education. The Cohen and Rhenman article commented upon earlier is an excellent example.

Another recent study by Dale and Klasson [40], particularly pertinent to this paper, is a survey of the use of management gaming in collegiate schools of business. It reports modest usage of the management game technique in business schools, and discusses several interesting aspects of the results of the study. A brief summary of these results is included as Appendix E.

Speaking again of conferences and symposia, three of these have been held on management gaming, and the published reports of the proceedings provide an excellent review of management gaming, its uses, its progress, its problems, its advantages and shortcomings, and its avowed potential and possibilities [38, 41, 42].

3. Books

Relatively few books have been written on management gaming. Several games or collections of games have been published in book form and some introductory remarks are generally included concerning management games and their construction and use [1, 2, 4, 6, 11]. Two other books, one by Kibbee, Craft, and Nanus[7], and the other by Greenlaw, Herron, and

Rawdon [5], considered basic in the literature, consist in large part of descriptions of a game, or games, but provide considerably more in the way of information on management games, their uses, their construction, and how they may be integrated into academic curricula or into training programs. The Kibbee book includes an extensive chapter which relates the features of management gaming to basic learning theory. Greenlaw presents an interesting consideration that deserves mention and that is the value of game construction to instructors. Both the Kibbee and Greenlaw books are considered required reading for anyone interested in management gaming.

4. Summary

In summary, then, it can be said that:

a. The literature on management games consists in large measure of articles and papers in business periodicals and professional journals.

b. These articles and papers are, in turn, largely reportorial or merely descriptive of management gaming, its development and use.

c. The more specific professional studies reported on deal with such topics as the value and validity of gaming as an instructional technique, its uses in education, surveys of management game usage, and the design of games.

d. Published reports of proceedings provide the current thinking of those involved in the study and use of games with regard to the above aspects of management gaming.

e. A number of books provide games or collections of games and a few also provide textual material regarding management games in general, their design, and their use in an educational curriculum.

III

THE STUDY

This study then is a critical analysis of available, manual management games based upon their applicability to, and possible use in, the various courses taught in the Business Administration and Economics curriculum at the U. S. Naval Postgraduate School.

In conducting the study, the first step was to obtain as many games as possible for analysis. Many games have been published in books and in articles in professional journals and other periodicals. Information regarding possible sources of other games developed by various business and educational institutions and individuals are also included in books and articles and in reports of symposia and other professional meetings. Manual games in this latter category were requested by correspondence to the indicated sources.

It was planned initially to limit the scope of the study to manual functional games. It was soon apparent, however, that this was an unnecessary and too restrictive a limitation, and manual total enterprise games were included to broaden the base of the study and to increase the amount of information that the study was expected to provide. Not all of the marketing games reported upon in the literature were requested , however, in view of the great number of these games developed and the fact that these functional games seemed to offer the least potential for use at the Postgraduate School. Ultimately 48 manual management games were obtained from published books and articles; through correspondence with business firms, educational institutions and individual developers of games; and from various members of the faculty of the Postgraduate School

who have games in their personal files.

Each of the 48 games collected was analyzed in terms of:

a. Its objective characteristics (i.e., the purpose of the game, the techniques or concepts emphasized, the subject matter, etc.) and the relationship of these characteristics to corresponding characteristics of the courses conducted in the Business Administration and Economics curriculum.

b. Its administrative characteristics (i.e., the time required to play and/or score the game, materials and space requirements, costs, etc.) and the probable impact of these characteristics upon the resources of the school, the department, the faculty, and the students.

In order to facilitate this analysis, each game was studied in detail and then described in a format which sets forth these essential characteristics in a uniform, organized manner. The format used is that developed by the authors of Business Simulation In Industrial and University Education[5], supplemented as necessary to suit the purpose of this study.

The resulting break-down of each game not only facilitates the study but provides a useful description of manual games for ready reference. These descriptions of the games analyzed are included in Appendix A.

In order to provide a basis for comparison between the games analyzed and the various courses conducted in the Business Administration and Economics curriculum, a format was also developed for describing these courses in terms of the characteristics considered essential to the comparison. This descriptive breakdown of the courses analyzed is included in Appendix B. Not all the courses in the curriculum are included in Appendix B, as explained in Chapter IV.

Having analyzed both the games and the courses in the manner, and on the basis described above, the potential of each game with regard to its possible use in the Business Administration and Economics curriculum was evaluated on the basis of the correlation of the objective characteristics of the games and the courses, and the practical considerations of the administrative characteristics of the games and the resources of the school, faculty and students. The evaluation on both points was essentially a value judgment of the writers based upon their knowledge and understanding of the game, on the one hand, and their specific and general experience as students at the Postgraduate School, on the other. Chapter IV indicates the results of this evaluation. The criterion used was whether or not the playing of a particular game in a particular course would be likely to enhance the teaching of the concepts, principles or techniques being taught in the course, rather than simply the existence of a general relationship between the subjects covered in the courses and those involved in the game.

IV

RESULTS

This chapter presents the results of the study. It should be noted at the outset that the determination of the applicability of games to courses could not be accomplished simply on the basis of a comparison of their respective objective characteristics. This was particularly true of the total enterprise games, which cover a wide range of management concepts, functions, and principles. For most of the functional games as well, a careful analysis of all aspects of each game in terms of one or more courses to which it might be applicable, and of each course to which gaming in general might be applicable, was required. The complexity of the relationships between the games and courses also presented some difficulty in reporting the results of the study in an organized and lucid manner.

The results of the study are shown in Table 1 which begins on the following page. Through the use of a combination of symbols and notes, the writers have attempted to show the interrelationships of the games and courses studied to an extent somewhat beyond a simple indication that a particular game might be useful in a particular course. Table 1 reflects to some extent the degree of applicability that is attributed to a game used in a particular course or courses; the basis upon which the game is considered to be applicable; the reason why a game is not considered applicable to, or appropriate for use in, any of the courses in the curriculum; and the need for the use of principles taught in certain courses in playing certain games, though the games may not be appropriate for teaching these particular courses. The meanings of

TABLE 1

GAME/COURSE APPLICABILITY

Explanation of symbols and notes:

Symbols:

* - This game is recommended for use in this course.
% - This game lends itself to the application of quantitative methods such as maximization, minimization, Monte Carlo, expected value, etc.
# - Principles covered in this course are involved in this game.

Notes:

(1) - Permits the student to summarize the information covered in other courses.
(2) - See COMMENTS section of the game analysis sheets in Appendix A.
(3) - Not directly applicable to any of the courses, or does not contribute significantly as compared to other games analyzed.
(4) - This game is not directly applicable to any of the courses, but can be used to demonstrate gaming.

	Princ. of Econ. (210C)	Mrgl. Econ. (412A)	Micro. Econ. Theory (413A)	Mrgl. Acct. (422A)	Indust. Mgt. (440A)	Mat. Mgt. (460A)	Scientific Inv.Mgt. (462A)	Quant. Dec. Making (473A)	Mgt. Policy (491A)
Accounting		# (2)		* (2)					
Acme Publishing Company					%			%	
Auto Dealer Simulation		#	#	#					* (1)

TABLE 1 (con't)

	Princ. of Econ. (210C)	Mrgl. Econ. (412A)	Micro. Econ. Theory (413A)	Mrgl. Acct. (422A)	Indust. Mgt. (440A)	Mat. Mgt. (460A)	Scien-tific Inv.Mgt. (462A)	Quant. Dec. Making (473A)	Mgt. Policy (491A)
Baselogs						* (2)			
Business Management Game		#	#	#					* (1)
Dispatch-0					* (2)				
Executive Simulation of Corporate Strategies		#	#	#					* (1)
General Business Management Simulation		#	#	#					* (1)
Gusher (3)									
Harris and Hawkins		* (2)							
Industrial Sales Management Game		* (2)							
Inventory Control Game (4)									
Inventory Decision Game (4)									

TABLE 1 (con't)

	Princ. of Econ. (210C)	Mrgl. Econ. (412A)	Micro. Econ. Theory (413A)	Mrgl. Acct. (422A)	Indust. Mgt. (440A)	Mat. Mgt. (460A)	Scien- tific Inv.Mgt. (462A)	Quant. Dec. Making (473A)	Mgt. Policy (491A)
Inventrol							* (2)		
Investment Game (3)									
Log-Man-X (3)									
Management Decision Simulation (3)									
Management Decision Simulation (2)									
Managram					%			%	
Mantrap (2)									
Marketing Decision Simulation (3)									
Market Negotiation Management Game (3)									
Materials Inventory Management Game							* (2)		

TABLE 1 (con't)

	Princ. of Econ. (210C)	Mrgl. Econ. (412A)	Micro. Econ. Theory (413A)	Mrgl. Acct. (422A)	Indust. Mgt. (440A)	Mat. Mgt. (460A)	Scien-tific Inv.Mgt. (462A)	Quant. Dec. Making (473A)	Mgt. Policy (491A)
Monopologs					# (2)	* (2)			
National Equipment Corp.(3)									
Operation Federal Reserve	* (2)								
Operation Interlock		#	#	#					* (1)
Organization Simulation					%			%	
Personnel Assignment Management Game					* (2)				
Pioneer Pen Company					%			%	
Plant Scheduling & Warehouse Distribution							* (2)		
Precision Photographic Instrument Company		* (2)							
Production Management Game (4)									
Production Scheduling Game					* (2)				
Production Scheduling Management Game					* (2)				

TABLE 1 (con't)

	Princ. of Econ. (210C)	Mrgl. Econ. (412A)	Micro. Econ. Theory (413A)	Mrgl. Acct. (422A)	Indust. Mgt. (440A)	Mat. Mgt. (469A)	Scien-tific Inv.Mgt. (462A)	Quant. Dec. Making (473A)	Mgt. Policy (491A)
Prov-Man-X (3)									
Qual-Man-X (2)									
Retailing Department Management Game		* (2)							
Rohr Business Game		#	#	#					* (1)
Scheduling Production (4)									
Simulated Economics Models			* (2)						
Simuload (4)									
Tempo Military Planning Game									* (2)
Tempomatic		#	#	#					* (1)
Top Operating-Management Game		#	#	#					* (1)
Unifle (4)									
Universal Toy Company					%			%	
X-OTOL (4)									

symbols and notes are provided at the beginning of Table 1. The following comments clarifying the above features of Table 1 appear appropriate:

a. Degree of applicability: It is a conclusion of the writers that hardly any of the games studied could be considered to have no relationship or applicability to any of the courses in the curriculum, yet the games vary widely in degree of applicability. The symbols "*", "%", and "#" attempt to scale broadly this variation. The symbol "*" reflects a specific and direct use of the game in teaching a particular course and a recommendation for its use in the course. The symbol "%" identifies games which might be useful in a particular course because of a relationship to the general subject matter of the course. The symbol "#" actually indicates the use of principles of a course in a game rather than the use of the game to teach or illustrate these principles. Absence of this symbol below a course (such as Principles of Economics) is not meant to imply that the material of the course is not utilized in the game, but the use of the symbol is to indicate something more than a very general and basic application of course principles. Note (4) also indicates a very marginal applicability of some games to the curriculum in general.

b. Basis for applicability: Notes (1) and (2) indicate the general basis for a determination that a game is applicable to a particular course. Note (1) summarizes several games into one category; i.e., those games that permit the student to summarize the information covered in other courses. Note (2) simply refers the reader to the comments section of the game analysis sheet in Appendix A from which

the applicability should be apparent.

c. Reasons for rejecting games: The reasons for rejecting some of the games can be summarized into two categories. Notes (3) and (4) describe these categories and are considered self explanatory. Some of the games included under note (3) may be marginally useful, but as stated, would serve the same purpose as better games which are also available, so these marginal games are rejected. Other games are shown in the table as having no application to particular courses and are annotated with note (2) immediately following the game title. These games are considered inappropriate for use for reasons included in the comments on the individual game analysis sheet in Appendix A. Games which are rejected on the basis of excessive administrative and/or time requirements (among other reasons) are included in this group.

With regard to considerations of time and administrative requirements, some difficulty was encountered in (a) determining precisely what these requirements might be in many of the games, and (b) deciding what level of such requirements would justify rejecting the game on the basis that it was too high. Considerable leeway was taken in considering the latter factor on the presumption that only the person responsible for determining the scope and content of the course could decide if a game required too great a commitment of time and facilities. This consideration was of most significance in connection with the total enterprise games recommended for use in the Management Policy course.

It will be readily noted that only nine of the 28 required and optional courses offered in the Business Administration and Economics curriculum are included in Table 1. The nineteen courses not shown on

Table 1 are not included in Appendix B either. These courses were eliminated from consideration on the basis of a general review of the subject matter covered in the courses as described in the Postgraduate School Catalogue, and the experience of the writers in the course, or discussions with other students or instructors as appropriate. The general basis for rejecting these courses are as follows:

a. Some courses have no relationship or have only a remote relationship to the games being analyzed, and none of the games analyzed are considered useful in teaching the material covered in these courses as presented during the current academic year. These courses are: Budgeting and Control (MN 423A), Internal Control and Auditing Seminar (MN 424A), Comptrollership Seminar (MN 425A), Cost Estimation and Analysis (MN 426A), Systems Analysis (MN 423A), Management Psychology (MN 452B), Personnel Administration and Industrial Relations (MN 453A), Personnel Administration Seminar (MN 455A), Labor Relations (MN 456A), Procurement and Contract Administration (MN 461A), Facilities Planning (MN 480A), Computers and Data Processing (MN 481A).

b. Several courses provide concepts, principles, and tools which are essential to the playing of many of the games analyzed. However, none of the games appear to be appropriate to the teaching of these concepts, principles, and tools in these courses. These courses are: Principles of Accounting (221C), Mathematics for Management (MN 270C), National Income and International Trade (MN 415A), Probability and Statistics I and II (MN 471A and MN 472A), Organization Theory and Administration (MN 490A), and Organization and Management Seminar (495A). A case might be made for use of one or two of the functional games in the Probability and Statistics course as being illustrative of some

quantitative decision-making techniques, particularly expected value. However, these games seem better utilized in the courses indicated on Table 1.

With one exception, all of the total enterprise games considered applicable to the curriculum have been recommended for use in the course Management Policy (491A). This is consistent with Dill's[1] observation that this is the most appropriate use of such games, and the validity of this viewpoint is readily apparent after a study of management gaming and experience with such a management policy course.

Table 2 provides a summary of the applicability of games to courses determined by this study and expressed in Table 1. It shows that:

a. Of the 14 total enterprise games analyzed, nine were considered to have direct application to and are recommended as being useful in two different courses. These same conditions applied for 16 out of the 34 functional games analyzed in six different courses.

b. Eight total enterprise games specifically utilize concepts or principles of one or more of three different courses other than the one for which its use is recommended. Two functional games similarly use the concepts or principles of one or more of four different courses.

c. Five functional games have a general relationship to two courses and might be useful for illustrative or other purposes in these courses.

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[1] Dill, William R. "Management Games and the Design of Educational Programs," Proceedings of the National Symposium on Management Games. Symposium at University of Kansas, December, 1958. Lawrence, Kansas: University of Kansas, 1959.

TABLE 2

A Summary of Games to Course Applicability

Type of Game	Total Enterprise		Functional		
Application Code	*	#	*	%	#
Courses:					
Principles of Economics			1		
Managerial Economics		8	4		1
Micro-Economics		7	1		1
Managerial Accounting	1	7			1
Industrial Management			5	5	1
Material Management			2		
Scientific Inventory Mgt.			3		
Quant. Decision Making				5	
Management Policy	8				
Total Number of Applicable Games	9	8	16	5	2
Total Number of Courses Having Games Applicable	2	3	6	2	4
Total Games Analyzed	14		34		

Note: Codes shown in "Application Code" column are those explained in Table 1, page 20.

The other figures in the table provide information on individual courses and specific types and categories of games.

Other observations resulting from the study are as follows:

a. The total enterprise games are much the same in concept, differing for the most part only in complexity.

b. The largest number of functional games have been developed in the areas of production control and marketing. These too vary considerably in complexity and some functional games can be very complex.

c. Most of the available manual games are industry oriented as opposed to military oriented. Only five of the games analyzed were set in a military environment. Two aspects of these military oriented games should be noted: Such games may enable players to relate more readily to the game situation and the required problem-solving and decision-making. On the other hand, with the exception of Baselogs, Monopologs, and Tempo, the military games analyzed are considered too specifically based on Air Force procedures and regulations for application to the Naval Postgraduate School.

V

SUMMARY AND CONCLUSIONS

1. Summary

This study attempted to determine if presently available non-computerized management games had applicability to the Business Administration and Economics curriculum at the United States Naval Postgraduate School, accepting the basic assumption that this relatively new teaching technique of management gaming was an effective method for teaching the principles, concepts and techniques being taught in this curriculum.

After researching the current literature on management games, 48 of these manual games were collected from a variety of sources. These games were analyzed in detail in terms of the content of the courses being taught in the Business Administration and Economics curriculum during the 1964-1965 academic year and determinations were made as to the applicability of these games to these courses. This determination was made on the basis of the indicated teaching objectives of the games and courses in terms of concepts, principles and techniques, described, illustrated, developed, exercised, utilized or required.

The results of this analysis was a determination that 25 of the 48 games analyzed were directly applicable to eight of the 28 courses offered in the curriculum and that five others might be useful for limited purposes in two of the courses.

2. Conclusions

In terms of the statement of the problem, the basic conclusion reached after completion of the study is that there are a number of

manual management games available which would be useful in teaching several courses in the Business Administration and Economics curriculum. Other conclusions and comments considered appropriate are as follows:

a. Certainly, use of all the games in the courses indicated in Chapter IV is neither practical nor desirable. Use of gaming requires varying degrees of commitment of time, resources and effort. Further, though it may not be a conclusion that can be reached from the results reported in Chapter IV, the research conducted prompts agreement with the conclusion of many other writers that gaming must be carefully integrated into a course or curriculum, properly balanced with other teaching techniques, to contribute its maximum effectiveness.

b. The total enterprise games are considered to be almost exclusively appropriate to the Management Policy course. It is here that the games and course objectives most closely harmonize, for the playing of the games requires the synthesis of the knowledge and tools taught in the earlier courses of the curriculum, which is also the objective of the Management Policy course. Several of the total enterprise games analyzed are considered to have excellent potential for use in this course.

c. The Industrial Management and the Managerial Economics courses appear to have the greatest potential for use of functional games in terms of those presently available. This reflects the relatively large number of production-scheduling and marketing games that have been developed.

d. While almost all the games analyzed were industry oriented, similarities between industry oriented games and the military oriented games were sufficiently apparent to suggest modification of some industry

games into a military orientation.

e. Only the persons responsible for determining what is to be taught in a particular course and how it is to be taught can ultimately determine the usefulness of any of the games analyzed in this study. Only they can achieve the necessary integration of the game into the course and the required balance between gaming and other methods of instruction, or between the time and other resources required to play the game, the anticipated results, and the objectives of the course.

3. Recommendations

Having established the relationships set forth in Chapter IV it is recommended that further specific analysis of recommended games be undertaken by those responsible for determining course objectives and for conducting the courses in order to make appropriate use of this teaching method.

In terms of further research it is suggested that:

a. Available manual games be analyzed with a view toward reorienting such games into a military environment to increase the value of the games to the Postgraduate School curriculum by relating them to military situations and problems, either in general military terms, or in terms of specific Navy procedures and regulations, where appropriate to the course in question, as done, for example, by the Air Force in the several Air Force oriented games analyzed.

b. Research be conducted into the design of specific games to meet the requirements of those courses in the curriculum to which the application of management gaming appears to have the greatest potential.

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BIBLIOGRAPHY

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APPENDIX A[1]

SUMMARY OF GAME ANALYSES

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[1] The format for the description of the games in this appendix and the explanatory notes on the format are from Greenlaw, Paul S., *et. al*. *Business Simulation in Industrial and University Education*. Englewood Cliffs, New Jersey: Prentice-Hall, 1962. Some of the information on the game analysis sheets and in the explanatory notes has been modified or supplemented to suit the purposes of this study.

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Alphabetical index to game analyses 45

Game analysis sheets 47

SUMMARY OF GAME ANALYSES

The format followed in presenting this summary of game analyses is as follows:

I. Organization
II. Name of Simulation
III. Characteristics of Model
IV. Characteristics of Administrative Process
V. Comments
VI. Source of Information

The summary content presented under each of these headings is described below and is designed to assist the reader in readily understanding the summary material.

I. ORGANIZATION

Practically all business games have been developed under the auspices of either an industrial firm, a business association, an educational institution, or a governmental unit. In some cases an individual has developed a game entirely on his own initiative. All games indicate the organization developing or publishing them, or the organization which employed the game designer when the game was designed.

II. NAME OF SIMULATION

The formal game title, as designated by its designer, is used throughout this summary. In order to conveniently index this material, all games have been alphabetically listed.

III. CHARACTERISTICS OF MODEL

This refers to the nature of the game design.

(A) The terminology and factor relationships used in the game may be quite broad and, in fact, the product may be fictitious. Such a game is classified here as being "general" in nature. If, on the other hand, the game is designed to represent more closely a particular product, company or industry, it is referred to as a "specific" game and the product, company or industry is stated in the summary.

(B) The game may involve nearly all aspects of company operation, in which case it is referred to as a "total enterprise" game. If the game places emphasis on one phase of the business such as marketing, production, finance, or personnel, it is classified as "functional" and the function stressed is stated.

(C) If the game is completely programmed and has no element of randomness designed into it by the use of such devices as random number tables, tossing of coins, selection of items from a "fish bowl", etc., it is here designated as "deterministic". If the design of the game involves random elements, this has been indicated by either the designation "minor random elements" (where the use is somewhat incidental) or "major random elements" (where such elements are a significant feature of the game design).

(D) A game is classed as "interactive" if the decisions made by one group of participants have a specific mathematically determinable effect upon the results achieved by other groups of participants. If this is not the case, then the game is described as "non-interactive".

(E) A great majority of business games are "entirely quantitative"; i.e., the relationship between the various factors is mathematically determinable. In a limited number of games, "qualitative" factors have been introduced and the effect of these determined by the judgment or reaction of either a control group or the game administrator. This effect may or may not be quantitatively expressed. A game containing such a feature is here classified as "has qualitative factors".

(F) A game may involve only one product throughout its play and so is classed as a "one product" game. If the game involves more than one product from the start of play, or if an opportunity is presented at any point in the game operation for the development of one or more additional products, it has been designated as a "multi-product" game.

(G) If a game throughout its play involves only one geographical, consumer, or price market in which the product or products may be sold, it has been classed as a "single market" game. If the product or products are sold in more than one geographical, consumer, or price market, and such market is separately and differently treated in the game design, the game has been classified as a "multi-market" game.

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS

This heading refers to the operational features of the game.

(A) Some business games are played individually. The player may be seeking a solution to a problem presented, or he may be competing on a relative accomplishment basis with other players or with the game

model itself. Such games are here referred to as games for "individual play". If the game is played by groups composed of two or more participants working together, it is here classed as "companies of _____ participants" and the range of numbers of participants recommended has been indicated.

(B) The range of the number of companies which generally play the game is designated. The practical limit has been stated rather than the theoretical limit. This consideration is based particularly on the number of companies for which a meaningful critique can be presented. There are, in addition, certain limits on the number of companies because of computational problems and, perhaps less significantly, problems of man-power and physical facilities.

(C) In certain business games the roles or positions as well as the responsibilities and duties of each of the participants are stated in the game briefing or instructions. Such games are here classed as "role positions assigned". If the game is started by the players without such structuring and they are expected to develop the positions, assign them and then establish an organization to carry on the game activities, the game is referred to in the summary as "role positions developed by participants". If the game sometimes is used with "role positions assigned" and at other times with "role positions developed by participants", both classifications are indicated in the game summary.

(D) Business games in which the participants occupy roles which would ordinarily represent different hierarchical levels in business organization are classed, with the exception noted below, as having

"multiple organization levels". If the organization structure includes only one participant in the capacity as leader and all other participants are on a single organization level, or if all participants are equal in hierarchical status, the game has been classified as one of "single organization level".

(E) If the business game is primarily of educational value for only one run by a given participant or group of participants, it has been classified as "use for one run only". If the game is intended to be used repeatedly for the same participant or group of participants and the loss of educational value is expected to be non-existent or relatively small, the game is classified as "use for repeated runs." This "use for repeated runs" type of game may involve a change in parameters or changes of an administrative nature rather than changes in design.

V. COMMENTS

Under this heading such matters as for whom the game is intended, the extent to which it has been used, the designer's evaluation of its relative success in use, its unique characteristics and other items peculiar to the game are presented.

VI. SOURCE OF INFORMATION

The names of books and articles from which the information was obtained about the games described in the summaries are listed, and an annotation is provided regarding location of the game at the Postgraduate School.

NAME OF GAME	PAGE
Accounting**	47
Acme Publishing Company**	48
Automobile Dealer Simulation*	49
Baselogs*	50
Business Management Game**	51
Dispatch-0**	52
Executive Simulation of Corporate Strategies**	53
General Business Management Simulation*	54
Gusher**	55
Harris and Hawkins**	56
Industrial Sales Management Game**	57
Inventory Control Game*	58
Inventory Decision Game**	59
Inventrol**	60
Investment Game	60a
Log-Man-X***	61
Management Decision Simulation**	62
Management Decision Simulation	63
Managram*	64
Mantrap	65
Marketing Decision Simulation**	66
Market Negotiation Management Game**	67
Materials Inventory Management Game**	68
Monopologs*	69
National Equipment Corporation**	70
Operation Federal Reserve*	71
Operation Interlock*	72
Organization Simulation*	73
Personnel Assignment Management Game**	74
Pioneer Pen Company**	75
Plant Scheduling and Warehouse Distribution**	76
Precision Photographic Instrument Company**	77

NAME OF GAME	PAGE
Production Management Game**	78
Production Scheduling Game*	79
Production Scheduling Management Game*	80
Prov-Man-X	81
Qual-Man-X	82
Retailing Department Management Game**	83
Rohr Business Game*	84
Scheduling Production**	85
Simulated Economics Models**	86
Simuload**	87
Tempo***	88
Tempomatic*	89
Top Operating-Management Game**	90
Uniflo**	91
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X-OTOL**	93

NOTE: Except as noted on four of the analysis sheets, all games analyzed are available in complete form as indicated by the following annotations on the above listing and the analysis sheets:

* - Available in the vertical file section of the Postgraduate School library under the key term "management games".

** - Available in the library and listed in the main catalog by the author or book title indicated in Section VI of the analysis sheet.

*** - Available in the Defense Management Systems Office presently located at the Postgraduate School.

I. ORGANIZATION: Ohio State University

II. NAME OF SIMULATION: Accounting

III. CHARACTERISTICS OF MODEL

A. General
B. Total enterprise
C. Deterministic
D. Non-interactive
E. Entirely quantitative
F. Single product
G. Single market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Companies of 4-7 participants
B. For 4-6 companies
C. Role positions assigned and developed by participants
D. Multiple organization level
E. Use for repeated runs

V. COMMENTS:

This business decision simulation demonstrates how accounting information is used in decision-making and also shows the inter-relationships between financial statements and the methods of accumulating data. It is used at Ohio State in the second semester of accounting during the 6th through 10th week. The simulation reviews standard cost accounting, standard costs, marginal analysis, breakeven analysis and capital budgeting.

VI. SOURCE OF INFORMATION:

Gray, Jack, John Willingham, and Kenneth Johnston. "A Business Game for the Introductory Course in Accounting", The Accounting Review, 38:336-346, April 1963**

I. ORGANIZATION: McGraw - Hill Book Company

II. NAME OF SIMULATION: Acme Publishing Company

III. CHARACTERISTICS OF MODEL:

  A. Specific: Publishing Company

  B. Functional: Sales

  C. Deterministic

  D. Non-Interactive

  E. Entirely Quantitative

  F. One Product

  G. Multi-Market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

  A. Individual

  B. Range: Any number of individuals

  C. Role positions Assigned

  D. Single Organization Level

  E. Use for One Run Only

V. COMMENTS:

A self scoring game that is intended to maximize the sale of paperback books by optimum arrangement of display racks.

VI. SOURCE OF INFORMATION AND GAME:

Corbin, Arnold, _et_. _al_. _Decision Exercises In Marketing_. New York: McGraw-Hill, 1964**

I. ORGANIZATION: Wayne State University

II. NAME OF SIMULATION: Automobile Dealer Simulation

III. CHARACTERISTICS OF MODEL:

- A. Specific: Automobile
- B. Functional: Marketing
- C. Deterministic
- D. Interactive
- E. Entirely quantitative
- F. Multi-product
- G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

- A. Companies of 2 - 6 participants
- B. For 2 - 5 companies
- C. Role positions developed by participants
- D. Single organization level
- E. Use for repeated runs

V. COMMENTS:

This game for supervisory and middle management personnel, as well as for college students, had been played by over 100 persons by Sept. 1960. The market involves new and used cars, service, parts, and accessories. Intensive player analysis and critiques are used.

VI. SOURCE OF INFORMATION AND GAME:

"Automobile Dealer Simulation" by J. J. Rath*

I. ORGANIZATION: The RAND Corporation

II. NAME OF SIMULATION: Baselogs

III. CHARACTERISTICS OF MODEL:

A. Specific: Airforce logistics

B. Functional: Operations, maintenance and supply

C. Minor random elements

D. Non-interactive

E. Quantitative

F. Single product

G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Individual or group play

B. For individual play only or for a small group acting as a single person

C. Role positions assigned

D. Single organization level

E. Use for one run only

V. COMMENTS:

This game deals with the interactions between logistics and operations on a fighter-interceptor air base. The player acts as the base manager. Emphasis is on the most effective use of a limited fund, forcing trade-offs and optimal allocation of resources.

VI. SOURCE OF INFORMATION:

"BASELOGS" by RAND Corporation*

I. ORGANIZATION: McKinsey and Company, Inc.

II. NAME OF SIMULATION: Business Management Game

III. CHARACTERISTICS OF MODEL:

- A. General
- B. Total enterprise
- C. Major random elements
- D. Interactive
- E. Entirely quantitative
- F. Single product
- G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

- A. Companies of 3-4 participants
- B. For 2-3 companies
- C. Role positions assigned or developed by participants
- D. Single organization level
- E. Use for repeated runs

V. COMMENTS:

This game incorporates the key elements of a one-product capital goods company which is competing with one or two other companies for the same market. Elements involved are marketing, advertising, R & D, production, finance and competition.

VI. SOURCE OF INFORMATION:

Andlinger, G. R. "Business Games - Play One," Harvard Business Review, 36: 115-125, March, 1958**

I. ORGANIZATION: General Electric Company

II. NAME OF SIMULATION: Dispatch-0

III. CHARACTERISTICS OF MODEL:

A. Specific: Machine Shop
B. Functional: Production - Job scheduling
C. Deterministic
D. Non-interactive
E. Entirely quantitative
F. Single product
G. No market is involved

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Companies of 3-4 participants
B. For any number of companies
C. Role positions assigned
D. Single organization level
E. Use for repeated runs

V. COMMENTS:

This game for production specialists and supervisors emphasizes production scheduling for job-shop dispatchers using Gantt Charts. It is designed to assist in the presentation of new methods of releasing and sequencing work to the factory floor. Student results achieved are compared with those achieved by using certain priority rules and specialized dispatch formulas. It also demonstrates the use of quantative techniques for determining job scheduling.

VI. SOURCE OF INFORMATION:

"Dispatch-0" General Electric -- included in Material Management Games by General Electric Corporation**

I. ORGANIZATION: Charles E. Merrill Books, Inc.

II. NAME OF SIMULATION: Executive Simulation of Corporate Strategies

III. CHARACTERISTICS OF MODEL:

A. Specific: Rubber industry

B. Total enterprise

C. Deterministic

D. Interactive

E. Entirely Quantitative

F. Multi-product

G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Companies of 5-6 participants

B. For 3-4 companies

C. Role positions developed by participants

D. Multiple organization level

E. Use for repeated runs

V. COMMENTS:

The simulation is first presented as a static case study and then goes into a dynamic simulation. It is designed to emphasize planning strategies and careful forecasting, planning and subsequent monitoring of performance.

VI. SOURCE OF INFORMATION:

Basil, Douglas C., and Paul R. Cone. _Executive Decision-Making Through Simulation_. Columbus, Ohio: Charles E. Merrill Books, Inc., 1965**

I. ORGANIZATION: Ohio University

II. NAME OF SIMULATION: General Business Management Simulation

III. CHARACTERISTICS OF MODEL:

A. General

B. Total enterprise

C. Minor random aspects

D. Interactive

E. Entirely quantitative

F. Single product

G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Companies of 5-7 participants

B. For 4 companies

C. Role positions developed by participants

D. Single organization level

E. Use for repeated runs

V. COMMENTS:

This game is for use by college undergraduates in Business Administration programs and in the Executive Development Program at Ohio University.

VI. SOURCE OF INFORMATION:

"General Business Management Simulation" by Dr. Edwin T. Hellebrandt*

I. ORGANIZATION: Harvard University School of Business

II. NAME OF SIMULATION: "Gusher"

III. CHARACTERISTICS OF MODEL:

A. Specific: Oil and gas industry-drilling decisions
B. Functional: Financial
C. Major random aspects
D. Interactive
E. Entirely quantitative
F. Single product
G. Single market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Individual play or companies of 2-3 participants
B. For 4-5 players
C. Role positions developed by participants
D. Single organization level
E. Use for repeated runs

V. COMMENTS:

The game is intended for college students and oil industry personnel. It deals with such matters as purchase leases, drilling wildcat wells, developing proven properties and purchasing geological information. Stress is placed on the utilization of decision theory tools. A physical "gusher" model is used to physically "test" reservoirs to determine whether or not they are "dry holes" or productive wells. Eight to sixteen hours of play are necessary to carry the game to a mature stage.

VI. SOURCE OF INFORMATION:

Grayson, C. Jackson, Jr. Decisions Under Uncertainty. Drilling Decisions by Oil and Gas Operators. Boston: Harvard University, 1960**

I. ORGANIZATION: McGraw-Hill Book Co.

II. NAME OF SIMULATION: Harris & Hawkins

III. CHARACTERISTICS OF MODEL:

A. Specific: Department store

B. Functional: Merchandising

C. Deterministic

D. Non-Interactive

E. Entirely Quantitative

F. Multi-Product

G. Multi-market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Individual

B. Range: Any number of individuals

C. Role positions assigned

D. Single organization level

E. Use for One run only

V. COMMENTS:

The game involves department store merchandising and optimizing merchandising factor combinations by classification to maximize total department contribution.

VI. SOURCE OF INFORMATION AND GAME:

Corbin, Arnold, _et_. _al_. _Decision Exercises in Marketing_. New York: McGraw-Hill, 1964**

I. ORGANIZATION: John Wiley and Sons, Inc.

II. NAME OF SIMULATION: Industrial Sales Management Game

III. CHARACTERISTICS OF MODEL:

- A. General
- B. Functional: Marketing
- C. Deterministic
- D. Interactive
- E. Entirely quantitative
- F. Single product
- G. Multi-market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

- A. Companies of 1-3 participants
- B. For 2-4 companies
- C. Role positions either assigned or developed by participants
- D. Single organization level
- E. Use for repeated runs

V. COMMENTS:

Involves estimates of market demand, development and evaluation of sales force and an understanding of index numbers. It also involves market demand, economic indicators and establishment of corporate objectives. The player has to select the economic indicator which closely represents the market trend.

VI. SOURCE OF INFORMATION:

Greene, Jay R., and Roger L. Sisson, Dynamic Management Decision Games. New York: John Wiley and Sons, 1959**

I. ORGANIZATION: University of California at Los Angeles

II. NAME OF SIMULATION: Inventory Control Game

III. CHARACTERISTICS OF MODEL:

A. General
B. Functional: Inventory management
C. Major random elements
D. Non-interactive
E. Entirely quantitative
F. Single product
G. Single market

IV: CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Individual
B. For any number of participants
C. Role positions assigned
D. Single organization level
E. Use for repeated runs

V. COMMENTS:

The game is concerned with an inventory-management problem. Initial inventory, orders received, total inventory, customer orders received and sales are tabulated for each week. Costs are accumulated from inventory carrying costs, cost of placing orders and costs of lost sales. Demands on inventory will be determined by cutting a special deck of cards described in the game.

VI. SOURCE OF INFORMATION:

"Learning From Experience in Business Decision Games"
James R. Jackson*

I. ORGANIZATION: Ohio State University

II. NAME OF SIMULATION: Inventory Decision Game

III. CHARACTERISTICS OF MODEL:

A. General

B. Functional: Inventory

C. Deterministic

D. Non-interactive

E. Entirely quantitative

F. Single product

G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Individual play

B. For any number of individuals

C. Role positions assigned

D. Single organization level

E. Use for one run only

V. COMMENTS:

A simplified inventory management game in which participants are called upon to make decisions each period about the quantity of a single item to stock. It could be used to illustrate expected value.

VI. SOURCE OF INFORMATION:

Morris, William T. _Engineering Economy_. _The Analysis of Management Decisions_. Homewood, Illinois: Richard D. Irvin, Inc., 1960**

I. ORGANIZATION: General Electric Company

II. NAME OF SIMULATION: Inventrol

III. CHARACTERISTICS OF MODEL:

- A. Specific: Alloy castings
- B. Functional: An inventory control game
- C. Minor random aspects
- D. Interactive
- E. Entirely quantitative
- F. Single product
- G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

- A. Companies of 3-4 participants
- B. For 5 companies
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

This game for production and purchasing specialists is designed to foster a more inductive approach to ordering, stocking and lot size determination problems. The players are confronted with a situation where special alloy castings necessary for production are sometimes in limited supply. When total orders for castings exceed vendors capacity the castings are allocated on a proportional basis so interaction is in the form of competition for supply. Involves: demand forecasting; EOQ formula, inventory control, elements of lot size, lead time, safety stock, carrying costs and shortage costs.

VI. SOURCE OF INFORMATION:

"Inventrol" by General Electric -- included in Materials Management Games by General Electric Corporation**

I. ORGANIZATION: Michigan State University

II. NAME OF SIMULATION: Investment Game

III. CHARACTERISTICS OF MODEL:

A. General
B. Total enterprise
C. Deterministic
D. Interactive
E. Entirely quantitative
F. Single product
G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Companies of 1-5 participants
B. For 3-9 companies
C. Role positions either assigned or developed by participants
D. Single organization level
E. Use for repeated runs

V. COMMENTS:

Intended for upperclass and graduate college students, this game involves business formation and operation including an over-the-counter securities market. A top-operating management game is used as a data-generation source. Each participant begins the game as a promoter, investor, or over-the-counter dealer. The promotors start out with a certain amount of cash which they supplement by stock and hand sales in dealings with investors and over-the-counter dealers. Involves: Corporate Financing, trading in debt equity and securities.

VI. SOURCE OF INFORMATION:

"Michigan State University Investment Game" by Richard C. Henshaw, Jr.*

I. ORGANIZATION: U. S. Air Force School of Systems and Logistics

II. NAME OF SIMULATION: Log-Man-X

III. CHARACTERISTICS OF MODEL

A. Specific: Air Force Logistics
B. Total enterprise
C. Major random elements
D. Non-interactive
E. Entirely quantitative
F. Single product
G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Teams of five participants
B. Up to five teams
C. Role positions assigned
D. Single organizational level
E. Use for repeated runs

V. COMMENTS:

This game is designed to illustrate the interrelationship of various management decisions required to conduct logistic support operations. The setting is an Air Force supply system in which five bases are to be supported from one depot and contractor facilities. The game includes exercise in requirements determination, procurement, maintenance, and distribution and transportation. It would require from one-third to one-half the class time of the average graduate course if played during class time. Exercise is oriented to Air Force procedures and regulations.

VI. SOURCE OF INFORMATION:

Log-Man-X by Wg. Cdr. B. J. May, R.A.F. (Ret.) and J. H. Strick. U. S. Air Force School of Systems and Logistics***

I. ORGANIZATION: Indiana University

II. NAME OF SIMULATION: Management Decision Simulation

III. CHARACTERISTICS OF MODEL:

   A. General
   B. Total enterprise
   C. Deterministic
   D. Interactive
   E. Entirely quantitative
   F. Single product
   G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

   A. Companies of 3-7 participants
   B. For 2-9 companies
   C. Role positions developed by participants
   D. Single organization level
   E. Use for repeated runs.

V. COMMENTS:

Five decisions are made each quarter. These are: price determination, production volume, expenditure on marketing and promotion, plant expansion, and stockholders' dividend. This game is intended for lower class college students in an introductory business administration course.

VI. SOURCE OF INFORMATION:

Martin, E. W., Jr. Management Decision Simulation. Homewood, Illinois: Richard D. Irwin, Inc., 1960**

I. ORGANIZATION: Oregon University

II. NAME OF SIMULATION: Management Decision Simulation

III. CHARACTERISTICS OF MODEL:

A. General

B. Total enterprise

C. Deterministic

D. Interactive

E. Entirely quantitative

F. Single product

G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Companies of 5-8 participants

B. For 3 companies

C. Role positions developed by participants

D. Single organization level

E. Use for repeated runs

V. COMMENTS:

This game provides industrial administrators and aspirants to the top-level decision-making group with a very practical means to simulate the procedures and to study the underlying concepts pertinent to upper-echelon industrial administration. This game is not complete.

VI. SOURCE OF INFORMATION:

Vance, Stanley. Management Decision Simulation. New York: McGraw-Hill, 1960. Available portion of game is in this book in the USNPGS library.

I. ORGANIZATION: USAF Air Material Command

II. NAME OF SIMULATION: MANAGRAM

III. CHARACTERISTICS OF MODEL:

A. General

B. Functional: Office Scheduling

C. Deterministic

D. Non-interactive

E. Entirely quantitative

F. No product

G. No market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Companies of 5 participants

B. For 4 companies

C. Role positions developed by participants

D. Single organization level

E. Use for one run only

V. COMMENTS:

The game has the ability to clearly present the merits, needs, workings and importance of a production control group while participants "live" for an hour as a manager of such a group. The objective of the game is to operate an office of 21 clerks and specialists at minimum cost while performing maximum work.

VI. SOURCE OF INFORMATION:

Anderson, David W. "A Game That Teaches Production Control Techniques", _The Office_, 55:132, May, 1962*

I. ORGANIZATION: University of Houston

II. NAME OF SIMULATION: Mantrap

III. CHARACTERISTICS OF MODEL:

   A. Specific: Manufacturing company
   B. Total enterprise
   C. Deterministic
   D. Non-interactive
   E. Entirely quantitative
   F. Multi-product
   G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

   A. Individual or several persons
   B. For any number of individuals
   C. Role positions developed by participants
   D. Multiple organization level
   E. Use for repeated runs

V. COMMENTS:

Mantrap simulates the operation of a small manufacturing company over a number of years. These years are broken down into six-month periods of time. In each period, a situation arises which necessitates a major decision. The game is presented in three volumes and contains over 300 pages. The game is considered to be too involved for manual processing.

VI. SOURCE OF INFORMATION:

Center for Research in Business and Economics, College of Business Administration, University of Houston, Houston, Texas. Not available at USNPGS.

I. ORGANIZATION: Prentice-Hall, Inc.

II. NAME OF SIMULATION: Marketing Decision Simulation

III. CHARACTERISTICS OF MODEL:

- A. General
- B. Functional: Marketing
- C. Deterministic
- D. Interactive
- E. Entirely quantitative
- F. Single product
- G. Multi-Market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

- A. Companies of 3-5 participants
- B. For 3 companies
- C. Role positions developed by participants
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

The game is structured around a generalized marketing business environment. It offers a vehicle for developing skills in the analysis of marketing-oriented business data, planning ahead and forecasting in the face of uncertainty in a competitive situation and dealing with the inter-relationships between key marketing variables. The decision factors are aggregative, the equations employed are not complex and the game can be scored manually in about 15 minutes.

VI. SOURCE OF INFORMATION:

Greenlaw, Paul S., Lowell W. Herron, and Richard H. Rawdon. Business Simulation in Industrial and University Education. Englewood Cliffs, New Jersey: Prentice-Hall, 1962**

I. ORGANIZATION: John Wiley and Sons, Inc.

II. NAME OF SIMULATION: Market Negotiation Management Game

III. CHARACTERISTICS OF MODEL:

A. General
B. Functional: Marketing
C. Deterministic
D. Interactive
E. Entirely quantitative
F. Single product
G. Multi-market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Companies of 4-6 participants
B. For 5 companies (2 manufacturing, 3 wholesale)
C. Role positions developed by participants
D. Single organization
E. Use for one run only

V. COMMENTS:

A direct company negotiation game. Pricing decisions relative to costs are an important aspect of this game. Both manufacturer and wholesaler levels in the marketing channel are represented.

VI. SOURCE OF INFORMATION:

Greene, Jay R., and Roger L. Sisson. Dynamic Management Decision Games. New York: John Wiley and Sons, 1959**

I. ORGANIZATION: John Wiley and Sons, Inc.

II. NAME OF SIMULATION: Materials Inventory Management Game

III. CHARACTERISTICS OF MODEL:

- A. General
- B. Functional: Production--inventory
- C. Deterministic
- D. Non-interactive
- E. Entirely quantitative
- F. Single product
- G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

- A. Individual play
- B. For any number of individuals
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

This game is designed to illustrate the use of economic order quantity formulas in inventory control. The use of the E.O.Q. formula is demonstrated. Demand forecasting is also involved.

VI. SOURCE OF INFORMATION:

Greene, Jay R., and Roger L. Sisson. _Dynamic Management Decision Games._ New York: John Wiley and Sons, 1959**

I. ORGANIZATION: The RAND Corporation

II. NAME OF SIMULATION: Monopologs

III. CHARACTERISTICS OF MODEL:

   A. Specific: U. S. Air Force Base Depot Supply System

   B. Functional: Procurement and supply

   C. Major random aspects

   D. Non-interactive

   E. Entirely quantitative

   F. Multi-product

   G. Multi-market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

   A. Individual play
   B. For any number of individuals
   C. Role positions assigned
   D. Single organization level
   F. Use for repeated runs

V. COMMENTS:

This game is of value for both military and civilian inventory management personnel. Monopologs is a compound name composed of "Monopoly" and "Logistics". It concerns the procurement and supply of a high value aircraft spare part to five bases in a supply system so as to avoid shortages and to accomplish this at a minimum cost. In doing this, the player initiates procurement, plans repair schedules and sets inventory and distribution policies. Random numbers for use in the game are derived from a Monte Carlo base depot model.

VI. SOURCE OF INFORMATION:

"Monopologs" RAND Corporation*

I. ORGANIZATION: McGraw-Hill Book Company

II. NAME OF SIMULATION: National Equipment Corporation

III. CHARACTERISTICS OF MODEL:

- A. Specific: Equipment corporation
- B. Functional: Sales
- C. Deterministic
- D. Non-Interactive
- E. Entirely quantitative
- F. Multi-product
- G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

- A. Individual
- B. Any number of participants
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

The company has four product lines. The purpose of the case is to study the present organization and operations for marketing and to make recommendations for changes that will improve its profit performance.

VI. SOURCE OF INFORMATION:

Corbin, Arnold, _et. al_. _Decision Exercises in Marketing_. New York: McGraw-Hill, 1964**

I. ORGANIZATION: Boeing Airplane Company

II. NAME OF SIMULATION: Operation Federal Reserve

III. CHARACTERISTICS OF MODEL:

A. Specific: Banking
B. Functional: Finance
C. Deterministic
D. Non-interactive
E. Entirely quantitative
F. Multi-product
G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Companies of 5-7 participants
B. For 4 companies
C. Role positions developed by participants
D. Single organization level
E. Manual
F. Use for repeated runs

V. COMMENTS:

Designed for undergraduate college students of economics, this game involves banks and the Federal Reserve System. Decisions concern the amount of callable and non-callable loans to be made, the amount of callable loans to be called in, purchase or sale of government bonds and securities, the amount to be transferred to or from the Federal Reserve Bank reserve account, the amount of loans to be rediscounted, etc. Participant goal is to place the maximum amount of non-callable loans while maintaining a good balance of other assets and obeying all reserve requirements. Objective is to clarify abstract concepts about money, credit, banking and the operations of the Federal Reserve.

VI. SOURCE OF INFORMATION:

"Operation Federal Reserve" Boeing Aircraft Company*

I. ORGANIZATION: Boeing Airplane Company

II. NAME OF SIMULATION: Operation Interlock

III. CHARACTERISTICS OF MODEL:

  A. Specific: Aircraft industry
  B. Total enterprise
  C. Deterministic
  D. Interactive
  E. Entirely quantitative
  F. Single product
  G. Multi-market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

  A. Companies of 4-7 participants
  B. For 5 companies
  C. Role positions developed by participants
  D. Single organization level
  E. Manual
  F. Use for repeated runs

V. COMMENTS:

This game for middle management groups highlights problems such as over and under commitment in relation to capacity, overtime problems, inventory, effects of research, etc. A business cycle is programmed into the game.

VI. SOURCE OF INFORMATION:

"Operation Interlock" Boeing Aircraft Company*

I. ORGANIZATION: University of Illinois

II. NAME OF SIMULATION: Organization Simulation

III. CHARACTERISTICS OF MODEL:

A. General

B. Functional: Sales and production

C. Deterministic

D. Interactive

E. Entirely quantitative

F. Multi-product

G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Companies of 6 participants

B. For 4 companies

C. Role positions assigned

D. Single organization level

E. Use for repeated runs

V. COMMENTS:

Each organization is divided into two groups-three in sales and three in the production group. The objective of the game is to select the most profitable orders, making them at the lowest possible cost to realize the greatest profit.

VI. SOURCE OF INFORMATION:

"Organization Simulation" University of Illinois, Department of Management*

I. ORGANIZATION: John Wiley and Sons, Inc.

II. NAME OF SIMULATION: Personnel Assignment Management Game

III. CHARACTERISTICS OF MODEL:

- A. General
- B. Functional: Production--personnel
- C. Deterministic
- D. Non-interactive
- E. Entirely quantitative
- F. Single product
- G. Multi-market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

- A. Companies of 1-2 participants
- B. For 1-6 companies
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

This game illustrates the linear programming approach to solving a simple assignment of resources problem. The game is played by use of the assignment method of linear programming.

IV. SOURCE OF INFORMATION:

Greene, Jay R., and Roger L. Sisson. Dynamic Management Decision Games. New York: John Wiley and Sons, 1959**

I. ORGANIZATION: McGraw Hill Book Company

II. NAME OF SIMULATION: Pioneer Pen Company

III. CHARACTERISTICS OF MODEL:

- A. Specific: Pen company
- B. Functional: Itinerary planning
- C. Deterministic
- D. Non-interactive
- E. Entirely quantitative
- F. Single product
- G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS

- A. Individual
- B. Any number of participants
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

The game is used to dramatize the importance of sound management of salesmen's time and to show how careful itinerary planning can optimize the pay off of increased sales and higher commissions. This game is self-scored with all necessary forms given.

VI. SOURCE OF INFORMATION:

Corbin, Arnold, _et_. _al_. _Decision Exercises in Marketing_. New York: McGraw-Hill, 1964**

I. ORGANIZATION: Westinghouse Electric Corporation

II. NAME OF SIMULATION: Plant scheduling & Warehouse Distribution

III. CHARACTERISTICS OF MODEL:

- A. General
- B. Functional: Inventory control
- C. Deterministic
- D. Non-interactive
- E. Major random elements
- F. Single product
- G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

- A. Individual
- B. Range: no limit
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

The purpose of the game is to bridge the gap between theory and successful application of a distribution system. The game is first played without statistics and EOQ and then again using statistics and EOQ to show the advantage of the latter. A good example of the use of Monte Carlo Simulation.

VI. SOURCE OF INFORMATION:

Kibbee, Joel M., Clifford J. Craft and Burt Nanus. Management Games. New York: Reinhold, 1961**

I. ORGANIZATION: McGraw-Hill Book Company

II. NAME OF SIMULATION: Precision Photographic Instrument Company

III. CHARACTERISTICS OF MODEL:

A. Specific: Photographic instrument company

B. Functional: Sales

C. Deterministic

D. Non-interactive

E. Entirely quantitative

F. Single product

G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Individual

B. Any number of participants

C. Role positions assigned

D. Single organization level

E. Use for one run only

V. COMMENTS:

The game involves the introduction of a new product. The objective of the game is to select the optimum combination of channels of distribution, price and advertising investment to maximize profit. It also involves elasticity of demand, variable cost analysis and marginal analysis. The game is self scoring.

VI. SOURCE OF INFORMATION:

Corbin, Arnold, et. al. Decision Exercises in Marketing. New York: McGraw-Hill, 1964**

I. ORGANIZATION: Ohio State University

II. NAME OF SIMULATION: Production Management Game

III. CHARACTERISTICS OF MODEL:

A. General

B. Functional: Production management

C. Minor random aspects

D. Non-interactive

E. Entirely quantitative

F. Single product

G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Individual play

B. For any number of individuals

C. Role positions assigned

D. Single organization level

F. Use for one run only

V. COMMENTS:

The Player makes decisions regarding daily production volume. Consideration must be given to sales fluctuation and loss of production volume through scrappage for low quality reasons.

VI. SOURCE OF INFORMATION:

Morris, William T. _Engineering Economy_. _The Analysis of Management Decisions_. Homewood, Illinois: Richard D. Irvin, Inc., 1960**

I. ORGANIZATION: Procter and Gamble Company

II. NAME OF SIMULATION: Production Scheduling Game

III. CHARACTERISTICS OF MODEL:

A. Specific: Manufacture of soap products
B. Functional: Production scheduling
C. Major random aspects
D. Non-interactive
E. Entirely quantitative
F. Multi-product
G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:
A. Individual play
B. For any number of individuals
C. Role positions assigned
D. Single organization level
E. Use for one run only

V. COMMENTS:

This game for new management employees is scored on the basis of funds expended to accomplish a prescribed goal. Three periods are played. The game becomes more complex as it proceeds. Emphasis is placed on statistical control charts as a means for properly controlling inventory levels. Involves the operation of inventory controlled systems with application of EOQ formula, consideration of size of pack and distribution problems. Has as its objectives allowing players to experience problems confronting the production control manager, increasing understanding of the effect of scheduling on plant, warehouse, and sales. Illustrates use of simulation.

VI. SOURCE OF INFORMATION:

"Production Scheduling", Proctor and Gamble Company*

I. ORGANIZATION: John Wiley & Sons, Inc.

II. NAME OF SIMULATION: Production Scheduling Management Game

III. CHARACTERISTICS OF MODEL:

A. General

B. Functional: Production

C. Deterministic

D. Non-interactive

E. Entirely quantitative

F. Multi-product

G. No market involved

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Individual

B. For any number of individuals

C. Role positions assigned

D. Single organization level

E. Use for one run only

V. COMMENTS:

This game illustrates the value of Gantt charts and a system of assignment by priority in production planning. There are 13 decisions each requiring approximately 25 minutes.

VI. SOURCE OF INFORMATION:

Greene, Jay R., and Roger L. Sisson. Dynamic Management Decision Games. New York: John Wiley and Sons, 1959**

I. ORGANIZATION: U. S. Air Force School of Systems and Logistics

II. NAME OF SIMULATION: Prov-Man-X

III. CHARACTERISTICS OF MODEL:

   A. Specific: Air Force Logistics

   B. Functional - Provisioning

   C. Major random elements

   D. Non-interactive

   E. Entirely quantitative

   F. Single-product

   G. N/A

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

   A. Teams of five participants

   B. Normally five teams

   C. Role positions assigned

   D. Multiple organization levels

   E. Use for repeated runs

V. COMMENTS:

An exercise in the repair parts provisioning process, designed to provide students with an opportunity to apply and test their technical knowledge and management skills in procedures and techniques of provisioning. The game runs through five phases of the process from time-phasing to support of the weapons system. In each phase, participants are confronted with "inherent", "current", and "chaotic" problems requiring decisions. Game uses specific Air Force procedures. Game is incomplete in terms of problems to be solved.

VI. SOURCE OF INFORMATION:

Prov-Man-X by Dr. G. W. Calins and Wg. Cdr. B. J. May, R.A.F. (Ret.). U. S. Air Force School of Systems and Logistics. Descriptive information is avilable at the Defense Management Systems Program Office presently located at USNPGS.

I. ORGANIZATION: Ohio State University

II. NAME OF SIMULATION: Qual-Man-X

III. CHARACTERISTICS OF THE MODEL:

A. Specific: Electrical components

B. Functional: Quality Control

C. Major random elements

D. Non-interactive

E. Entirely quantitative

F. Multi-product

G. Single market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Individual play or teams of two to four

B. Range: Unlimited

C. Role positions developed by participants

D. Single organizational level

E. Use for one run only

V. COMMENTS:

A quality control exercise in which a series of successive problems confront the player. Alternative solutions for each problem result in costs (including dollar measurement of time required to reach a decision) and a probability of incurring a later consequential problem, or an assessment of an expected value of the alternative against the player. Game emphasizes use of statistical sampling and expected value among solution techniques. Note: Complete game not available at USNPGS.

VI. SOURCE OF INFORMATION:

Virgil Rehig. The Ohio State University, College of Commerce and Administration, Defense Management Center, Columbus, Ohio. Instructor's Manual only available at the Defense Management Systems Program office, presently located at USNPGS.

I. ORGANIZATION: John Wiley and Sons, Inc.

II. NAME OF SIMULATION: Retailing Department Management Game

III. CHARACTERISTICS OF MODEL:

   A. General
   B. Functional: Marketing
   C. Deterministic
   D. Non-interactive
   E. Entirely quantitative
   F. Multi-product
   G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

   A. Companies of 4-6 participants
   B. For 3 or more companies
   C. Role positions developed by participants
   D. Single organization level
   E. Use for repeated runs

V. COMMENTS:

This is a basic retail department store game emphasizing inventory requirements, forecasting, personnel and product line. Involves: market demand, the financial statements, working capital requirements.

VI. SOURCE OF INFORMATION:

Greene, Jay R., and Roger L. Sisson. Dynamic Management Decision Games. New York: John Wiley and Sons, 1959**

I. ORGANIZATION: Rohr Aircraft Company

II. NAME OF SIMULATION: Rohr Business Game

III. CHARACTERISTICS OF MODEL:

A. Specific: Aircraft and missile

B. Total Enterprise

C. Deterministic

D. Interactive

E. Entirely quantitative

F. Multi-product

G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Companies of 4-6 participants

B. For 3-5 companies

C. Role positions developed by participants

D. Multiple organization level

E. Use for repeated runs

V. COMMENTS:

The game involves 10 to 20 meetings. Each meeting being a business quarter. All business in the simulated industry is obtained through competitive bidding on various contracts involving the manufacture of metal parts and components. Involves: planning and formulation of objectives, industry conditions, economic conditions, operating statements, operating costs.

VI. SOURCE OF INFORMATION:

"Rohr Business Game" Rohr Aircraft*

I. ORGANIZATION: Procter and Gamble Company

II. NAME OF SIMULATION: Scheduling production

III. CHARACTERISTICS OF MODEL:

A. General
B. Functional: Production scheduling
C. Deterministic
D. Non-Interactive
E. Entirely Quantitative
F. Single Product
G. Single Market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Individual
B. For any number of participants
C. Role positions assigned
D. Single organization level
E. Use for one run only

V. COMMENTS:

This is a game in which you act as production control manager of a plant turning out just one product and with unlimited capacity. Your job is to devise a production plan so that you can fill weekly shipping orders from your available inventory plus current production. You are charged for holding inventories, for renting outside warehouse space in which to store it, for failure to meet shipping orders and for the costs involved in changing the going production rate.

VI. SOURCE OF INFORMATION:

"How Good Are You at Production Scheduling", Business Week, July 25, 1959**

I. ORGANIZATION: Richard D. Irwin

II. NAME OF SIMULATION: Simulated Economics Models

III. CHARACTERISTICS OF MODEL:

  A. Specific: Tire Manufacturing & Department Store Retailing
  B. Functional: Manufacturing & retailing
  C. Major random elements
  D. Interactive
  E. Has qualitative factors
  F. Multi-product
  G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

  A. Companies of 1-2 participants
  B. For 4 companies
  C. Role position assigned
  D. Multiple organization level
  E. Use for repeated runs

V. COMMENTS:

Designed to teach a prescribed set of economic principles. This text or workbook is used to supplement a standard economics text. It is an entire course in microeconomics. Involves: Fundamentals of price system, equilibrium of demand, principle of profit maximization, structure of industry, collusion and restriction of trade.

VI. SOURCE OF INFORMATION:

Haldi, John, and Harvey M. Wagner. Simulated Economic Models. Homewood, Illinois: Richard D. Irwin, Inc., 1963**

I. ORGANIZATION: General Electric Company

II. NAME OF SIMULATION: Simuload

III. CHARACTERISTICS OF MODEL:

A. Specific: Magnetos
B. Functional: Production--job shop
C. Deterministic
D. Non-interactive
E. Entirely quantitative
F. Single product
G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

A. Companies of 2 participants
B. For 2-8 companies
C. Role positions assigned
D. Single organization level
E. Use for one run only

V. COMMENTS:

This game is a master scheduling and loading game used at the opening session of General Electric Company educational programs in Production Control. The game requires about two and one-half hours to run, including orientation. It was developed to foster a more inductive approach to difficult scheduling problems. Involves: production scheduling, effect on costs of shift changes, production level changes, shortages and inventory carrying costs.

VI. SOURCE OF INFORMATION:

Kibbee, Joel M., Clifford J. Craft, and Burt Nanus. Management Games. New York: Reinhold, 1961**

See also Material Management Games by General Electric Corporation**

I. ORGANIZATION: General Electric, Santa Barbara, Calif.

II. NAME OF SIMULATION: Tempo Military Planning Game

III. CHARACTERISTICS OF THE MODEL:

- A. Specific: Military force structure
- B. Total enterprise
- C. Minor random elements
- D. Interactive
- E. Entirely quantitative
- F. Multi-product
- G. N/A

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

- A. Teams of four to six participants
- B. For two competing teams only
- C. Role positions developed by participants
- D. Single organizational level.
- E. Use for repeated runs

V. COMMENTS:

Game is based on military force structure planning within budgetary constraints. The object of the game is to obtain superiority over the opposing team in terms of offensive and defensive force units, the value of which is measured in utiles. Participants must consider costs, time phasing, and the enemy's course of action. Each team operates under conditions of uncertainty with respect to enemy's capabilities, probability of war, true costs, and pay-off utilities for

individual force units. Intelligence may be bought from umpires, and money may be invested in R&D. Use with large groups would require simultaneous playing by several two-team groups. Quantitive approaches could be applied to decision-making--expected value, game theory, etc.

VI. SOURCE OF INFORMATION:

General Electric Company, Santa Barbara, Calif.***

I. ORGANIZATION: University of Alabama

II. NAME OF SIMULATION: Tempomatic

III. CHARACTERISTICS OF MODEL:

A. General

B. Total enterprise

C. Major random elements

D. Interactive

E. Has qualitative factors

F. Single product

G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Companies of 4-6 participants

B. For 3-6 companies

C. Role positions developed by participants

D. Multiple organization level

E. Use for repeated runs

V. COMMENTS:

This game is intended to teach the student the importance of analyzing the business situation using the theories and techniques learned in the wide variety of courses. This is a very complex and time consuming game to grade, thus only one decision per day is allowed. Involves: Market analysis, production & purchasing, sales & distribution, sales promotions, financing, cash flow, etc.

VI. SOURCE OF INFORMATION:

"Tempomatic" by Charles R. Scott, Jr.*

I. ORGANIZATION: John Wiley and Sons, Inc.

II. NAME OF SIMULATION: Top Operating-Management Game

III. CHARACTERISTICS OF MODEL:

- A. General
- B. Total enterprise
- C. Deterministic
- D. Interactive
- E. Entirely quantitative
- F. Single product
- G. Single market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

- A. Companies of 2-6 participants
- B. For 3 or more companies
- C. Role positions developed by participants
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

This game involves cyclical variations. It places balanced emphasis on player analysis of the relationships between production, marketing and financial functions. Involves: price elasticity, promotional effects, market demand analysis, production control and expense control.

VI. SOURCE OF INFORMATION:

Greene, Jay R., and Roger L. Sisson. Dynamic Management Decision Games. New York: John Wiley and Sons, 1959**

I. ORGANIZATION: General Electric Company

II. NAME OF SIMULATION: Uniflo

III. CHARACTERISTICS OF MODEL:

- A. Specific: Special magnetos
- B. Functional: Production-flow shop
- C. Deterministic
- D. Non-interactive
- E. Entirely quantitative
- F. Single product
- G. Single market

IV. CHARACTERISTICS OF ADMINISTRATIVE PROCESS:

- A. Individual play or companies of 2 participants
- B. For 2-8 companies
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

This game is a production leveling exercise for flow shop operations. It demonstrates how fluctuating production levels impact on a business in terms of measurable costs.

VI. SOURCE OF INFORMATION:

Kibbee, Joel M., Clifford J. Craft, and Burt Nanus. Management Games. New York: Reinhold, 1961**

See also Material Management Games by General Electric Corporation**

I. ORGANIZATION: McGraw Hill Book Company

II. NAME OF SIMULATION: Universal Toy Company

III. CHARACTERISTICS OF MODEL:

- A. Specific: Toy company
- B. Functional: Sales
- C. Deterministic
- D. Non-interactive
- E. Entirely quantitative
- F. Single product
- G. Multi-market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

- A. Individual
- B. For any number of participants
- C. Role positions assigned
- D. Single organization level
- E. Use for one run only

V. COMMENTS:

The purpose of the game is to design the sales territories for the sales force so as to obtain that distribution of a given number of salesmen by territory which will yield the optimum total sales volume for the entire country.

VI. SOURCE OF INFORMATION:

Corbin, Arnold, _et_. _al_. _Decision Exercises in Marketing_. New York: McGraw-Hill, 1964**

I. ORGANIZATION: Prentice-Hall, Inc.

II. NAME OF SIMULATION: X-OTOL

III. CHARACTERISTICS OF MODEL:

A. General

B. Functional: Marketing and Production

C. Deterministic

D. Interactive

E. Entirely quantitative

F. Single product

G. Single market

IV. CHARACTERISTICS OF THE ADMINISTRATIVE PROCESS:

A. Companies of 3 participants

B. For any number of teams

C. Role positions assigned

D. Single organization level

E. Use for one run only

V. COMMENTS:

The game enables the participant to view each segment of a distribution channel as a contributing part of an integrated system. It enables the player to examine the time-sequence patterns of such a system, which involves the physical production and distribution of goods. It reveals the effect of various order and inventory policies.

VI. SOURCE OF INFORMATION:

Greenlaw, Paul S., Lowell W. Herron, and Richard H. Rawdon. Business Simulation in Industrial and University Education. Englewood Cliffs, New Jersey: Prentice-Hall, 1962**

APPENDIX B

COURSE DESCRIPTION SHEETS

Title: Principles of Economics (MN 210C)

Description: A study of macro-economic problems: the determination of the level of national output, analysis of the determinants of saving and investments and the roles of monetary and fiscal policy.

Objective Characteristics:

General: Central problems of economy
Price functioning of mixed capitalistic system
Supply and Demand
Individual and family income
Role of government in economy
National Income
Saving, consumption and investment
Income determination
Business cycles and forecasting
Prices and money
The banking system and deposit creation
Federal Reserve and central bank system
International trade and comparative advantage
Theory of growth

Title: Managerial Economics (MN 412A)

Description: General Economic principles applied to managerial decision-making. Practical tools which can be used to improve the allocation of the firm's resources are studied. Specific subjects include forecasting demand, cost analysis and capital budgeting.

Objective Characteristics:

General:
- Demand analysis
- Forecasting demand
- Short-run cost analysis
- Long-run costs and production functions
- Pricing
- Capital budgeting
- Risk and uncertainty

Specific:
- Incremental and marginal analysis
- Discounting
- Opportunity cost
- Equimarginal principle
- Elasticity-price, cross, income
- Market structures
- Gross National Product
- Econometric models
- Lead-lag approach
- Fixed and variable costs
- Break even analysis
- Output maximation and cost minimization
- Multiple product pricing
- Methods of evaluating investments
- Economic and probability analysis

Title: Micro-economic Theory (MN 413A)

Description: This course is designed to provide more intensive study in economic analysis with principle emphasis on value and distribution theory. Analysis is made of the behavior of business firms in their pricing, production, purchasing, and employment policies, and the relationship of the individual firm to the general pricing process.

Operational Characteristics:

General:

- Organization of the economic system
- Elasticity, demand, supply and market price under pure competition
- Consumer demand-utility; indifference curves
- Market classifications and demand faced by the firm
- Principles of production
- Costs of production
- Pricing and output under different market classifications
- Pricing and employment of resources under different market classifications
- Resource allocation
- Product distribution
- Equilibrium

Title: Managerial Accounting (MN 422A)

Description: Developes the managerial uses of accounting for decision making purposes in industry. Illustrates the application of commercial accounting to the Navy through the Navy Industrial Fund.

Operational Characteristics:

General: Cost accounting
Standard costs variance analysis
Capital budgeting decisions
Accounting data for executive decisions

Specific: Concepts of costs and value
Product costs for financial reporting
Measurement and control of overhead
Standard cost systems
Overhead variances and standard costs
Marginal analysis
Capital allocation and return on investment
Concept of present value

Title: Industrial Management (MN 440A)

Description: A practical, quantitative approach to organizational problems of measurement, determination of goals and decision making. The course as taught developes the role of quantitative data and techniques in management planning and control, production, industrial economics and military logistics problems.

Objective Characteristics:

General:	Backgrounds of quantitative analysis Models and model-building Project control techniques Simulation
Specific:	Analog and mathematical models Deterministic and stochastic models Pert and Critical Path Method Monte Carlo Linear programming

Title: Material Management (MN 460A)

Description: This course presents the functions of material planning, requirements determination, procurement, distribution, and control applied to the introduction, development, and supply support of major military programs. A broad overview is given of the various organizations of the Department of Defense in the material management field.

Operational Characteristics:

- General:
  - Economic analysis of defense problems
  - Organization of Department of Defense
  - Organization of Department of the Navy
  - Procurement and production procedures and problems
  - Maintenance procedures and problems
  - Inventory management
  - Inventory control systems
- Specific:
  - Indifference curve analysis
  - Production possibility curve analysis
  - The 3M system
  - EOQ formula
  - Safety stocks, distribution, demand forecasting
  - Military essentiality

Title: Scientific Inventory Management (MN 462A)

Description: The basic concepts and formulae used to develop material demand forecasting systems and variable inventory levels are reviewed and discussed. The scientific approach to basic inventory decisions is stressed. Opportunities are provided to study and analyze several approaches which introduce mathematical inventory as applied to the Navy Supply System.

Operational Characteristics:

General:
- The Replenishment Process
- Economic Order Quantity
- Reorder Point and Safety Stock Objectives
- Demand Forecasting
- Demand and Lead Time
- Reorder Point Formulas
- Stocking and Replenishment Rules
- Military essentiality

Title: Quantitive Decision Making (MN 473A)

Description: The course explores the application of science to decision-making, involving a survey of applicable tools of quantitative analysis. The course stresses practical applications of mathematical and statistical tools.

Objective Characteristics:

General: Game theory
Replacement theory
Queuing theory
Network analysis
Simulation
War gaming
Business gaming

Title: Management Policy (MN 491A)

Description: An attempt is made to synthesize the various functional areas of management into a composite whole. Stress is placed on the operation of top management rather than on component parts in the processes of analysis, decision-making, action and control in achieving various goals.

Objective Characteristics: This course teaches, or provides an opportunity for the use of, all the tools named in foregoing courses which might be appropriate to the situation being considered.

APPENDIX C

TABLE 1

SOME HYPOTHESES CONCERNING THE RELATIONS BETWEEN THE DESIGN AND ADMINISTRATIVE CHARACTERISTICS OF A BUSINESS GAME AND ITS PROPERTIES AS A TEACHING DEVICE

Design and Administrative Characteristics	Intervening Variables							
	1 Subjective realism	2 Dynamics of the game situation	3 Players' subjective understanding of the gross relationships of the game	4 Time pressures on the players	5 Need for information exchange within a team	6 Sensitivity of game results to quality of play	7 Feasibility of experimentation by players	8 Degree of competition
a Complexity of the game (the number of decision variables and the degree to which they are interrelated)	+		-	+	+	+	-	
b Number of players per team				-	+			
c Number of moves per real time unit				+				+
d Amount of automatic information feed-back provided players			+	+	+			
e Opportunities to buy information			+	+	+			
f Dynamic nature of the constraints limiting action		+			+	+	-	-
g Importance of random factors in the game		+				-	-	-
h Long-range influence of decisions		-				+		
k Equality (initial position, rules, team size, opportunities) of teams								+
m Validity of institutional information contained in the game	+							
n Multidimensionality of goals	+			+		-		-
o Use of human environment	+			+			+	
p Degree of quantification of the game structure	+							
q Discovery of the rules an important part of play			-	+			+	
Relations between intervening variables			-2	+2	+2		-2, -4	

Educational Properties of the Game as a Teaching Device	
Factors influencing these properties	Description
+1, +2, +6, +8	A Excitement and enjoyment of play
+e, +f, +5	B Importance of the interrelations between functional areas
-a, -c, +o	C Possibility of manipulating the game to create a desired problem situation
+1, +3, +6	D Credibility of results
+g, +2	E Experience in decision-making under conditions of uncertainty
-d, +e, +g, +7	F Importance of systematic collection of information
+F, +6, -4, -8	G Importance of techniques for systematic analysis
+b, +4, +a	H Importance of efficient solutions to organizational problems
+m, +1	K Teaching institutional facts
-4, +h	L Importance of long-range planning and policy-making
+o, -p, +q	M Importance of imaginative and creative behavior in a realistic situation

+ indicates a direct relationship
- indicates an inverse relationship

Note: Table 1 and these explanatory notes are from Kalman J. Cohen and E. Rhenman. "The Role of Management Games in Education and Research," Management Science, 7:145-152, January, 1961.

The hypotheses contained in Table 1 are arranged in three groups:

1. The center of the matrix shows the relationships between design and administrative characteristics and intervening variables. The + sign in row a, colum 1 thus corresponds to the hypothesis: "As the complexity of the game increases, the subjective realism will also increase, _ceteris paribus_".

2. Relationships between intervening variables are all gathered in the bottom line: "+2" in column 4 stands for the hypothesis: "As the dynamics of the game situation increase, the time pressures on the players will also increase, _ceteris paribus_".

3. Possible relationships between design and intervening variables and the properties of the game as a teaching device are indicated by the second column from the right. "+g, +2" in the fifth line should thus be read: "As the importance of random factors in the game and the dynamics of the game situation increase, the game will provide more experience in the decision-making under conditions of uncertainty, _ceteris paribus_".

APPENDIX D

The following is a summary of replies to questionnaires completed by the participants in two gaming exercises conducted during the 1964-65 academic year. The same group played both games. The first game played was SIMULOAD described in Appendix A. The second game was the IBM game, a computerized game.

SIMULOAD:

1. Played a business game before? Yes - 2; No - 21
2. Enjoyed the game very much. (22)

   Just as good a way to pass the time of day. (0)

   Did not like it. (1)

3. Gaming of great benefit. (15)

   Gaming of some benefit. (8)

   Gaming of no benefit. (0)

4. (Not applicable to SIMULOAD)

5. Courses that assisted in playing the game.

   Micro-Econ. (1)

   Statistics (5)

   Quant. Decis. (4)

   Math (1)

   Princ. Acct. (5)

   Indust. Mgt. (2)

   Mgt. Econ. (5)

   Princ. Econ. (4)

   Mgt. Acct. (3)

   All (1)

6. Would like to see more games. Yes-20, No-0, Undecided-3.

7. Comments

   Favorable:

   a. Enjoyable way to learn about decision making under uncertainty.

Comments (cont'd)

b. Much to be gained by playing games on a competitive basis.

c. More games; ties together management courses.

d. Quite beneficial

e. Thought provoking, helps tie courses together.

IBM MANAGEMENT GAME:

1. Played a business game before? All did.

2. Enjoyed the game very much. (20)

   Just as good a way to pass time. (0)

   Did not like it. (0)

3. Gaming of great benefit. (13)

   Gaming of some benefit. (7)

   Gaming of no benefit. (0)

4. Decision in all cases were arrived at as a committee, board of director or a team effort.

   Participated in making decisions? Yes-20 No-0

5. Courses that assisted in playing the game.

   Statistics (6)
   Quant. Dec. (7)
   Ind. Mgt. (3)
   Mgt. Econ. (6)
   Econ. (10)
   Accounting (8)
   Cost Acct. (5)
   All (1)

6. Would like to see more games.

   Yes-19 No-0 Undecided-1

7. Comments

Favorable:

a. Very interesting

b. Play the game again; just got the "feel".

c. Play game again, same group, 1 decision per day.

d. Very good.

e. Impressed with computer games.

APPENDIX E

The following comments have been extracted from a study by Dale and Klasson into the use of management gaming by American collegiate schools of business:[1]

Of 90 leading collegiate schools of business responding to the survey, 64 reported that business games were being used in 1962, six were planning to introduce gaming during 1963, and twelve indicated that they would like to use games, if resources permitted. Only eight of the 90 responding colleges were unconvinced of the value of gaming.

The following comments summarize the survey-questionnaire responses concerning graduate business courses:

1. While the concept of business gaming had been accepted as worthy of inclusion in graduate programs, as was also true in undergraduate programs, its wide use in terms of the number of courses using games was not yet commonplace among the schools surveyed.

2. Although it was found that a significant number of different courses used games, only in the areas of business policy, administrative management, and marketing management had gaming shown signs of modest support and acceptance.

3. Business games were not used in either accounting or finance courses.

4. Nominal amounts of total course time has been devoted to gaming exercises.

---

[1] Alfred G. Dale and Charles R. Klasson. Business Gaming: A Survey of American Collegiate Schools of Business. Austin, Texas: University of Texas, 1964.

Of the 29 noncomputerized games used in major collegiate schools of business, 18 represented functional games, and 11 were general management games. According to their descriptive titles, the majority of functional games were used in production and marketing courses. Because of their inherent complexities, general management games normally require more time and personnel than functional games for effective usage. Successful gaming exercises, involving the total enterprise and multiple variables, do exist, however, in less complex non-computerized formats and have proven successful for achieving various educational objectives.

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